

Amendment to the Claims:

1-53. (Cancelled).

54. (Currently Amended) A method of deactivating a pathogenic chemical agent comprising:

5 subjecting the pathogenic chemical agent to a peroxide in the form of a vapor ~~and in the presence of~~ a nitrogen containing compound in the form of a gas, a ratio of the peroxide to the nitrogen containing compound being between 1:1 and 1:0.0001, the nitrogen containing compound being of the general formula:



wherein R_1 , R_2 , and R_3 independently are selected from H and an alkyl group.

55. (Previously Presented) The method as set forth in claim 54, wherein:

the peroxide includes hydrogen peroxide.

56. (Previously Presented) The method as set forth in claim 54, wherein:

the peroxide is in the form of a vapor.

57. (Previously Presented) The method as set forth in claim 56, further including:

vaporizing a liquid peroxide compound to form a peroxide vapor.

58. (Previously Presented) The method as set forth in claim 54, wherein:

the nitrogen containing compound includes ammonia.

59. (Previously Presented) The method as set forth in claim 54, wherein:

the nitrogen containing compound includes an alkyl amine.

60. (Previously Presented) The method as set forth in claim 54, wherein:

the ammonia gas and the hydrogen peroxide vapor is present in a ratio of between 1:1 and 0.0001:1.0.

61. (Previously Presented) The method as set forth in claim 54, wherein:

the nitrogen containing compound and peroxide is in the form of a gaseous mixture.

62. (Previously Presented) The method as set forth in claim 61, wherein:

the nitrogen containing compound is at a concentration of at least 1 ppm in the gaseous mixture.

63. (Previously Presented) The method as set forth in claim 62, wherein:

the nitrogen containing compound concentration is less than about 100 ppm.

64. (Previously Presented) The method as set forth in claim 63, wherein:

the nitrogen containing compound concentration is at least about 3 ppm in the gaseous mixture and less than about 20 ppm.

65. (Previously Presented) The method as set forth in claim 64, wherein:

the nitrogen containing compound includes ammonia at a concentration of about 8 ppm.

66. (Previously Presented) The method as set forth in claim 61, wherein:

the peroxide is at a concentration of at least 50 ppm in the gaseous mixture.

67. (Previously Presented) The method as set forth in claim 61, wherein:

the peroxide is at a concentration of less than 1000 ppm in the gaseous mixture.

68. (Previously Presented) The method as set forth in claim 67, wherein:

the peroxide is at a concentration of at least 400-800 ppm in the gaseous mixture.

69. (Previously Presented) The method as set forth in claim 68, wherein:

the nitrogen containing compound includes ammonia at a concentration of from about 3-20 ppm.

70. (Previously Presented) The method as set forth in claim 69, wherein:

the temperature is about 23-25°C.

71. (Previously Presented) The method as set forth in claim 69, wherein:

the peroxide includes hydrogen peroxide at a concentration of about 600 ppm in the gaseous mixture.

72. (Previously Presented) The method as set forth in claim 71, wherein:

the nitrogen containing compound includes ammonia at a concentration of about 8 ppm in the gaseous mixture.

73. (Previously Presented) The method as set forth in claim 66, wherein:

the peroxide concentration is at least about 200 ppm in the gaseous mixture.

74. (Currently Amended) The method as set forth in claim 61, wherein:

the gaseous mixture further includes a carrier gas.

75. (Previously Presented) The method as set forth in claim 74, wherein:

the carrier gas includes air.

76. (Previously Presented) The method as set forth in claim 54, wherein:

the chemical agent includes at least one of G-type, V-type, and H-type chemical agents, and combinations thereof.

77. (Previously Presented) The method as set forth in claim 76, wherein the chemical agent includes a G-type chemical agent and the method further includes:

5 contacting the pathogenic chemical agent with the nitrogen containing compound and peroxide for sufficient time to reduce the G-type agent to a level of less than 1% of its original concentration.

78. (Previously Presented) The method as set forth in claim 77, wherein:

the contacting time is up to about six hours.

79. (Previously Presented) The method as set forth in claim 54, further including:

maintaining the temperature during the step of subjecting at from about 15°C to about 30°C.

80. (Previously Presented) The method as set forth in claim 54, wherein the nitrogen containing compound is a liquid and the method further includes:

vaporizing the liquid in a vaporizer.

81. (Currently Amended) An apparatus for ~~deactivating~~ a pathogenic chemical agent performing the method of claim 54, comprising:

means for subjecting the pathogenic chemical agent to a peroxide in the form of a vapor and a nitrogen containing compound in the form of a gas, a ratio 5 of the peroxide to the nitrogen containing compound being between 1:1 and 1:0.0001, the nitrogen containing compound being of the general formula:



where R_1 , R_2 , and R_3 independently are selected from H and an alkyl group.

82. (Previously Presented) The apparatus as set forth in claim 80, wherein the subjecting means includes:

5 a vaporizer for vaporizing a peroxide liquid,
a supply of the nitrogen-containing compound, and
a mixing region for mixing the nitrogen containing compound and vapor.

83. (Previously Presented) The apparatus as set forth in claim 82 wherein:

means for injecting hydrogen peroxide to the vaporizer at a rate of 0.4-0.5 grams/minute.

84. (Previously Presented) The apparatus as set forth in claim 82, wherein:

the mixing region is at an entrance of an enclosure in which the pathogenic chemical agent is disposed.

85. (Currently Amended) The apparatus as set forth in claim 84, including:

a liquid hydrogen peroxide source for supplying liquid hydrogen peroxide to the vaporizer, and

5 wherein the supply (32) of nitrogen containing compound includes a compressed ammonia gas tank.

86. (Previously Presented) The apparatus as set forth in claim 85, including:

5 a control means which controls a rate of supplying the hydrogen peroxide to the vaporizer and a rate of supplying the ammonia gas to form a mixture in which a concentration of ammonia is at least 1 ppm.

87. (Previously Presented) The apparatus as set forth in claim 82, wherein the nitrogen containing compound includes a liquid, and further including:

a mister for forming a mist of the liquid nitrogen containing compound.

88. (Previously Presented) The apparatus as set forth in claim 82, further including:

a chamber connected with the mixing region for receiving items contaminated with the pathogenic chemical agent.

89. (Previously Presented) The apparatus as set forth in claim 82, wherein the subjecting means includes:

a means for atomizing or vaporizing an alkaline liquid to form the nitrogen containing compound.

90. (Previously Presented) The apparatus as set forth in claim 89, further including:

a peroxide vaporizing means which generates a vapor or mist containing the peroxide; and

5 a chamber connected with the atomizing or vaporizing means for receiving the vapor or mist.

91. (Currently Amended) A method for decontamination of an item contaminated with GD, the method comprising:

5 contacting the item contaminated with GD in an enclosure with a vapor containing a peroxide and ammonia for sufficient time to reduce the concentration of GD to less than about 1% of its initial concentration, the time for the concentration to reach 1% of its initial concentration being less than 6 hrs.

92. (Currently Amended) A method of deactivating a pathogenic chemical agent comprising:

forming a peroxide vapor;

increasing the pH of the vapor with a pH-increasing compound;

5 subjecting the pathogenic chemical agent to the peroxide at the increased pH for sufficient time to deactivate the chemical agent, thereby reducing the concentration of the chemical agent to less than 1% of the original concentration by weight.

93. (Previously Presented) The method as set forth in claim 92, wherein the peroxide includes hydrogen peroxide and the pH-increasing compound includes ammonia.

94. (Currently Amended) ~~The A method as set forth in claim 93~~ of deactivating a pathogenic chemical agent comprising:
forming a peroxide vapor comprising hydrogen peroxide;
increasing the pH of the vapor with a pH-increasing compound
5 comprising ammonia, wherein the hydrogen peroxide is at a concentration of from about 200-800 ppm and the ammonia is at a concentration of from 3-40 ppm; and
subjecting the pathogenic chemical agent to the peroxide at the increased pH to deactivate the chemical agent, thereby reducing the concentration of the chemical agent to less than 1% of the original concentration by weight.

95. (Previously Presented) The method as set forth in claim 94, wherein the temperature is room temperature.

96. (Currently Amended) A method of deactivating a biologically active substance comprising:
subjecting the biologically active substance to a mixture of a strong oxidant compound and an alkaline compound, both in a gaseous form, the alkaline
5 compound in gaseous form includes a mist formed by atomizing a liquid alkaline
compound.

97. (Cancelled).

98. (Previously Presented) The method as set forth in claim 96, wherein:
the strong oxidant includes a peroxy compound.

99. (Previously Presented) The method as set forth in claim 98, further including:
vaporizing a liquid peroxy compound to form a peroxy vapor.

100. (Currently Amended) The method as set forth in claim 96, wherein:

the alkaline compound includes ~~at least one of ammonia and~~ a short chain alkyl amine.

101. (Previously Presented) The method as set forth in claim 96, wherein:

the peroxy compound includes hydrogen peroxide.

102. (Previously Presented) The method as set forth in claim 96, wherein:

the biologically active substance includes one or more of chemical agents, pathogens, prions, and biotoxins.

103. (Previously Presented) The method as set forth in claim 102, wherein:

the biologically active substance includes G-type nerve agents.

104. (Currently Amended) The method as set forth in claim ~~50~~ 91, wherein:

the ammonia gas and the hydrogen peroxide vapor [[is]] are present in a ratio of between 1:1 and 0.0001:1.0.